IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method of sharpness enhancement of an input signal comprising the steps of:

detecting, in a first spatial direction, a first subset of edges in the input signal to obtain a first detector signal, the detecting of the first subset of edges including high-pass filtering the input image signal to obtain a high-pass filtered signal;

detecting, in the first spatial direction, a second subset of edges in the input signal to obtain a second detector signal, the second subset being different from the first subset, the detecting of the second subset of edges including band-pass filtering the input image signal to obtain a band-pass filtered signal;

determining a peaking factor by using a predetermined two-dimensional enhancement function allocating values for the peaking factor to combinations of values of the first detector signal and the second detector signal, the determining of the peaking factor by using a predetermined two-dimensional enhancement function being adapted for allocating values for the peaking factor to

combinations of values of the high-pass filtered signal and the band-pass filtered signal; and

multiplying the first detector signal with the peaking factor to obtain a peaked signal, the multiplying being adapted for multiplying the high-pass filtered signal with a multiplying factor based on the peaking factor, wherein:

the high-pass filtering includes horizontal high-pass filtering a horizontal component of the input image signal to obtain a horizontal high-pass filtered signal,

the band-pass filtering includes horizontal band-pass filtering the horizontal component of the input image signal to obtain a horizontal band-pass filtered signal, and

the determining of the peaking factor includes using a predetermined two-dimensional horizontal enhancement function for allocating values for a horizontal peaking factor to combinations of values of the horizontal high-pass filtered signal and the horizontal band-pass filtered signal,

wherein the method further includes the steps of:

vertical high-pass filtering a vertical component of the input image signal to obtain a vertical high-pass filtered signal; and

vertical band-pass filtering the vertical component of the input image signal to obtain a vertical band-pass filtered signal, wherein

the determining of the peaking factor includes using a predetermined two-dimensional vertical enhancement function for allocating values for a vertical peaking factor to combinations of values of the vertical high-pass filtered signal and the vertical band-pass filtered signal,

wherein the multiplying includes:

multiplying the horizontal high pass filtered signal with the horizontal peaking factor to obtain a horizontal correction factor,

multiplying the vertical high pass filtered signal with the vertical peaking factor to obtain a vertical correction factor,

summing the horizontal correction factor and the vertical correction factor to obtain a total correction factor, and

summing the total correction factor to the input image signal,

wherein the method includes determining a level of noise being present in the input image signal, and modifying the horizontal peaking factor and/or vertical peaking factor in dependence on the level of noise in order to reduce an enhancement of noise,

wherein the determining of the level of noise includes estimating a standard deviation of the noise,

and wherein the estimating of the standard deviation includes determining for each pixel of a 3 by 3 pixels window:

$$rc(m,n) = 1/3 \sum_{i=-1}^{1} \sum_{j=-1}^{1} \left| L(m+i,n+j) - vgl(m,n) \right|$$

wherein vgl(m,n) is an approximation of an average value of the luminance values of the pixels in the 3 by 3 pixels window.

2-3. (Cancelled).

4. (Currently Amended) The method ~~of~~ as claimed in claim ~~3~~1, wherein:

the horizontal enhancement function has a relatively low value if:

(i) a value of the horizontal high-pass filtered signal and a value of the horizontal band-pass filtered signal are substantially equal,

(ii) the value of the horizontal high-pass filtered signal is larger than a first predetermined value, or

(iii) the value of the horizontal band-pass filtered signal is larger than a second predetermined value; otherwise,

the horizontal enhancement function has a relatively high value if:

(iv) the value of the horizontal high-pass filtered signal is smaller than the first predetermined value, or

(v) the value of the horizontal band-pass filtered signal is smaller than the second predetermined value.

5. (Cancelled).

6. (Currently Amended) The method ~~of~~ as claimed in claim ~~5~~1, wherein:

the vertical enhancement function has a relatively low value if:

(i) a value of the vertical high-pass filtered signal and a value of the vertical band-pass filtered signal are substantially equal,

(ii) the value of the vertical high-pass filtered signal is relatively large, or

(iii) the value of the vertical band-pass filtered signal is relatively large; otherwise,

the vertical enhancement function has a relatively high value if:

(iv) the value of the vertical high-pass filtered signal is relatively small, or

(v) the value of the vertical band-pass filtered signal is relatively small.

7. (Cancelled).

8. (Currently Amended) The method ~~of~~ as claimed in claim ~~7~~1, wherein the summing of the horizontal correction factor and the vertical correction factor includes weighting the horizontal correction factor with a horizontal weighting factor, and the vertical correction factor with a vertical weighting factor, wherein the horizontal weighting factor has a lower value when the vertical correction factor surpasses a first threshold, and wherein the vertical weighting factor has a lower value when the horizontal correction factor surpasses a second threshold.

9-10. (Cancelled).

11. (Currently Amended) The method ~~of~~ as claimed in claim ~~3~~1, wherein the input image signal represents an image formed by a matrix of pixels, a position of a pixel in the matrix being defined by indices m,n wherein the index n indicates a horizontal position

and the index m indicates a vertical position, and wherein the horizontal high-pass filtering includes Laplacian filtering defined by $Zx(m,n)=2L(m,n)-L(m,n-1)-L(m,n+1)$, and wherein the horizontal band-pass filtering includes filtering defined by $Dx(m,n)=L(m,n+1)-L(m,n-1)$, and wherein $L(m,n)$ is related to the luminance of a pixel at position m,n, $L(m,n-1)$ is related to the luminance of a pixel at position m,n-1, and $L(m,n+1)$ is related to the luminance of a pixel at position m,n+1.

12. (Currently Amended) The method ~~of~~ as claimed in claim ~~5~~1, wherein the input image signal represents an image being formed by a matrix of pixels, a position of a pixel in the matrix being defined by indices m,n wherein the index n indicates a horizontal position and the index m indicates a vertical position, and wherein the vertical high-pass filter includes a Laplacian filter defined by $Zy(m,n)=2L(m,n)-L(m-1,n)-L(m+1,n)$, wherein the vertical band-pass filter is a filter $Dy(m,n)=L(m+1,n)-L(m-1,n)$, and wherein $L(m,n)$ is related to the luminance of a pixel at position m,n, $L(m-1,n)$ is related to the luminance of a pixel at position m-1,n, and $L(m+1,n)$ is related to the luminance of a pixel at position m+1,n.

13. (Cancelled).

14. (Currently Amended) The method ~~of~~ as claimed in claim ~~13~~1, wherein the average value is determined by vgl(m,n)=L(m,n)**W1, wherein ** denotes a convolution, and W1 is a convolution mask indicating a weighting factor for each of the pixels in the 3 by 3 pixel window.

15. (Currently Amended) The method ~~of~~ as claimed in claim 14, wherein for each pixel a histogram is calculated with the following expression:

$$h(k) = \left|\{(m,n)\,|\,k-1/2 <= ro(m,n) < k+1/2\}\right| \quad \text{if } k=1,\ 2,\ \ldots, kmax, \text{ or}$$

$$= 2\left|\{(m,n)\,|\,0 <= ro(m,n) < 1/2\}\right| \qquad \text{if } k=0,$$

wherein $|\{\ldots\}|$ denotes the number of elements of the set $\{\ldots\}$, and wherein an estimated value for a standard deviation of the noise level is the value k=M corresponding to the highest value in the histogram, and wherein the horizontal peaking factor and the vertical peaking factor depend on the estimated value.

16. (Currently Amended) The method ~~of~~ as claimed in claim 1, wherein:

the detecting of the first subset of edges includes high-pass filtering the input image signal to obtain a first high-pass filtered signal,

the detecting of the second subset of edges includes high-pass filtering the input image signal to obtain a second high-pass filtered signal,

the determining of the peaking factor by using a predetermined two-dimensional enhancement function being adapted for allocating values for the peaking factor to combinations of values of the first high-pass filtered signal and the second high-pass filtered signal, and

the multiplying being adapted for multiplying the first high-pass filtered signal with the peaking factor.

17. (Currently Amended) The method ~~of~~ as claimed in claim 16, wherein:

the first high-pass filtering includes horizontal high-pass filtering a horizontal component of the input image signal to obtain a first horizontal high-pass filtered signal,

the second high-pass filtering includes horizontal high-pass filtering the horizontal component of the input image signal to obtain a second horizontal band-pass filtered signal, and

the determining of the peaking factor includes using a predetermined two-dimensional horizontal enhancement function for allocating values for a horizontal peaking factor to combinations

of values of the first horizontal high-pass filtered signal and the second horizontal high-pass filtered signal.

18. (Currently Amended) The method ~~of~~ as claimed in claim 17, wherein the method includes

first vertical high-pass filtering a vertical component of the input image signal to obtain a first vertical high-pass filtered signal,

second vertical high-pass filtering the vertical component of the input image signal to obtain a second vertical band-pass filtered signal,

the determining of the peaking factor includes using a predetermined two-dimensional vertical enhancement function for allocating values for a vertical peaking factor to combinations of values of the first vertical high-pass filtered signal and the second vertical high-pass filtered signal.

19. (Currently Amended) An apparatus comprising

a first edge detector that is configured to detect, in a first spatial direction, a first subset of edges in the input signal to obtain a first detector signal, said first edge detector includes a high-pass filter for high-pass filtering the input image signal to obtain a high-pass filtered signal;

a second edge detector_that is configured to detect, in the first spatial direction, a second subset of edges in the input signal to obtain a second detector signal, the second subset being different from the first subset, said second edge detector includes a band-pass filter for band-pass filtering the input image signal to obtain a band-pass filtered signal;

an enhancement determinator that is configured to determine a peaking factor by using a predetermined two-dimensional enhancement function allocating values for the peaking factor to combinations of values of the first detector signal and the second detector signal, said enhancement determinator determining of the peaking factor by using a predetermined two-dimensional enhancement function being adapted for allocating values for the peaking factor to combinations of values of the high-pass filtered signal and the band-pass filtered signal; and

a multiplier_that is configured to multiply the first detector signal with the peaking factor to obtain a peaked input signal, said multiplier multiplying the high-pass filtered signal with a multiplying factor based on the peaking factor, wherein:

the high-pass filtering includes horizontal high-pass filtering a horizontal component of the input image signal to obtain a horizontal high-pass filtered signal,

the band-pass filtering includes horizontal band-pass filtering the horizontal component of the input image signal to obtain a horizontal band-pass filtered signal, and

the determining of the peaking factor includes using a predetermined two-dimensional horizontal enhancement function for allocating values for a horizontal peaking factor to combinations of values of the horizontal high-pass filtered signal and the horizontal band-pass filtered signal,

wherein the apparatus further comprises:

a vertical high-pass filter for vertical high-pass filtering a vertical component of the input image signal to obtain a vertical high-pass filtered signal; and

a vertical band-pass filter for vertical band-pass filtering the vertical component of the input image signal to obtain a vertical band-pass filtered signal, wherein

the enhancement determinator uses a predetermined two-dimensional vertical enhancement function for allocating values for a vertical peaking factor to combinations of values of the vertical high-pass filtered signal and the vertical band-pass filtered signal,

wherein the multiplier:

multiplies the horizontal high pass filtered signal with the horizontal peaking factor to obtain a horizontal correction factor,

multiplies the vertical high pass filtered signal with the vertical peaking factor to obtain a vertical correction factor,

sums the horizontal correction factor and the vertical correction factor to obtain a total correction factor, and

sums the total correction factor to the input image signal,

wherein the apparatus includes:

means for determining a level of noise being present in the input image signal, and modifying the horizontal peaking factor and/or vertical peaking factor in dependence on the level of noise in order to reduce an enhancement of noise,

wherein the determining means estimates a standard deviation of the noise,

and wherein the estimating of the standard deviation includes determining for each pixel of a 3 by 3 pixels window:

$$rc(m,n) = 1/8 \sum_{i=-1}^{1} \sum_{j=-1}^{1} |L(m+i, n-j) - vgl(m,n)|$$

wherein vgl(m,n) is an approximation of an average value of the luminance values of the pixels in the 3 by 3 pixels window.

20. (Currently Amended) The apparatus ~~of~~ as claimed in claim 19, ~~including~~ wherein said apparatus further comprises a matrix display.